

Applicant : Guenther et al.
Serial No. : 09/786,833
Filed : June 18, 2001
Page : 2 of 13

Attorney's Docket No.: 12406-012001 / 1999P8115 US
F/GS

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Previously Presented) A device comprising:
a substrate;
at least two active components formed on a top surface of the substrate;
at least one non-active region separating the active components;
a first laminate over the top surface of the substrate, encapsulating at least the active components, the first laminate including a barrier layer and a protective layer formed on a plastic film, wherein the barrier layer is closer to the active components than the plastic film and the plastic film is between the barrier layer and the protective layer, the barrier layer is capable of inhibiting diffusion of air or moisture and the protective layer includes a polymeric resin and forms a hard coat; and
at least one support post in the non-active region, providing support for said first laminate.
2. (Previously Presented) The device of claim 1 wherein the active components comprise organic light emitting diode devices.
3. (Previously Presented) The device of claim 2 wherein the substrate supports the active components.
4. (Previously presented) The device of claim 3 wherein the substrate comprises a flexible substrate.

Applicant : Guenther et al.
Serial No. : 09/786,833
Filed : June 18, 2001
Page : 3 of 13

Attorney's Docket No.: 12406-012001 / 1999P8115 US
F/GS

5. (Previously Presented) The device of claim 4 wherein the substrate comprises a substrate material selected from the group of materials consisting of polymer, glass, ceramic, and semiconductor material.

6. (Previously presented) The device of claim 3 wherein the substrate comprises a transparent substrate.

7. (Previously Presented) The device of claim 6 wherein the substrate includes a material selected from a polymer or glass.

8. (Previously presented) The device of claim 3 wherein the substrate comprises a flexible transparent substrate.

9. (Previously presented) The device of claim 8 wherein the substrate comprises a material selected from a polymer or glass.

10. (Previously Presented) The device of claim 1 wherein the substrate supports the active components.

11. (Previously presented) The device of claim 10 wherein the substrate comprises a flexible substrate.

12. (Previously Presented) The device of claim 11 wherein the substrate material is selected from the group of materials consisting of polymer, glass, ceramic, and semiconductor material.

13. (Previously presented) The device of claim 10 wherein the substrate comprises a transparent substrate.

Applicant : Guenther et al.
Serial No. : 09/786,833
Filed : June 18, 2001
Page : 4 of 13

Attorney's Docket No.: 12406-012001 / 1999P8115 US
H/GS

14. (Previously Presented) The device of claim 13 wherein the substrate material includes a material selected from a polymer or glass.

15. (Previously presented) The device of claim 10 wherein the substrate comprises a flexible transparent substrate.

16. (Previously presented) The device of claim 15 wherein the substrate comprises a material selected from a polymer or glass.

17. (Previously Presented) The device of claim 13 or 14 further comprising a second laminate on a bottom surface of the substrate, wherein the second laminate comprises a transparent laminate.

18. (Previously Presented) The device of claim 17 wherein the first and second laminates comprise:

a laminate substrate; and

a sealant on a surface of the laminate substrate that contacts the support post or the substrate.

19. (Previously Presented) The device of claim 18 wherein the laminate substrate comprises a material having a sufficient thermal stability to maintain mechanical integrity during a laminating process.

20. (Cancelled)

21. (Previously Presented) The device of claim 19, wherein the plastic laminate substrate is selected from poly (ethylene terephthalate), poly (butylene terephthalate), poly (ethylene naphthalate), polycarbonate, polyimides, polysulfones, poly (p-phenylene ether

Applicant : Guenther et al.
Serial No. : 09/786,833
Filed : June 18, 2001
Page : 5 of 13

Attorney's Docket No.: 12406-012001 / 1999P8115 US
E/GS

sulfone), polyethylene, polypropylene, poly(vinyl chloride), polystyrene, or poly (methyl methyleacrylate).

22. (Previously Presented) The device of claim 21 wherein the sealant ~~comprises~~ flows at an activation temperature which causes sealing between the laminate substrate and the support post or substrate.

23. (Previously presented) The device of claim 22 wherein the activation temperature is between 80°C and 140°C.

24. (Previously presented) The device of claim 23 wherein the first and second laminates comprise a barrier layer, wherein the barrier layer inhibits the diffusion of air or moisture.

25. (Previously Presented) The device of claim 24 wherein the barrier layer comprises a material selected from a group consisting of a metallic and a dielectric material.

26. (Previously presented) The device of claim 25 wherein the metallic material comprises copper or aluminum and the dielectric material comprises silicon monoxide, silicon oxide, silicon dioxide, silicon nitride (Si_2N_4), or a metal oxide.

27. (Previously Presented) The device of claim 26 wherein the sealant flows at an activation temperature which causes sealing between the laminate substrate and the support post or substrate.

28. (Previously presented) The device of claim 27 wherein the activation temperature is between 80°C and 140°C.

Applicant : Guenther et al.
Serial No. : 09/786,833
Filed : June 18, 2001
Page : 6 of 13

Attorney's Docket No.: 12406-012001 / 1999P8115 US
E/GS

29. (Previously Presented) The device of claim 18 wherein the second laminate comprises a barrier layer that inhibits the diffusion of air or moisture.

30. (Previously Presented) The device of claim 29 wherein the barrier layer includes a metallic or a dielectric material.

31. (Previously Presented) The device of claim 10 further comprising a second laminate on a bottom surface of the substrate.

32. (Previously Presented) The device of claim 31 wherein said first and second laminates comprise:

a laminate substrate; and

a sealant on a surface of the laminate substrate that contacts the support post or substrate.

33. (Previously Presented) The device of claim 32 wherein the laminate substrate comprises a material having a sufficient thermal stability to maintain mechanical integrity during a laminating process.

34. (Previously presented) The device of claim 33 wherein the laminate substrate comprises a plastic material.

35. (Previously presented) The device of claim 34 wherein the plastic laminate substrate is selected from poly (ethylene terephthalate), poly (butylene terephthalate), poly (enthylene naphthalate), polycarbonate, polyimides, polysulfones, poly (p-phenylene ether sulfone), polyethylene, polypropylene, poly (vinyl chloride), polystyrene, or poly(methyl methyleacrylate).

Applicant : Guenther et al.
Serial No. : 09/786,833
Filed : June 18, 2001
Page : 7 of 13

Attorney's Docket No.: 12406-012001 / 1999P8115 US
L/GS

36. (Previously Presented) The device of claim 35 wherein the sealant flows at an activation temperature which causes sealing between the laminate substrate and the support post or substrate.

37. (Previously presented) The device of claim 36 wherein the activation temperature is between temperatures of 80°C and 140°C.

38. (Previously Presented) The device of claim 37 wherein the second laminate comprises a barrier layer that inhibits the diffusion of air or moisture.

39. (Previously Presented) The device of claim 38 wherein the barrier layer includes a metallic or a dielectric material.

40. (Previously presented) The device of claim 39 wherein the metallic material comprises copper or aluminum and the dielectric material comprises silicon monoxide, silicon oxide, silicon dioxide, silicon nitride (Si_2N_4), or a metal oxide.

41. (Previously Presented) The device of claim 32 wherein the sealant flows at an activation temperature which causes sealing between the laminate substrate and the support post or substrate.

42. (Previously presented) The device of claim 41 wherein the activation temperature is between temperatures of 80°C and 140°C.

43. (Previously Presented) The device of claim 32 wherein the second laminate comprises a barrier layer that inhibits the diffusion of air or moisture.

Applicant : Guenther et al.
Serial No. : 09/786,833
Filed : June 18, 2001
Page : 8 of 13

Attorney's Docket No.: 12406-012001 / 1999P8115 US
F/GS

44. (Previously Presented) The device of claim 43 wherein the barrier layer includes a metallic or a dielectric material.

45. (Previously Presented) The device of claim 2 wherein the first laminate comprises:
a laminate substrate; and
a sealant on a surface of the laminate substrate that contacts the support post.

46. (Previously Presented) The device of claim 45 wherein the laminate substrate comprises a material having a sufficient thermal stability to maintain mechanical integrity during a laminating process.

47. (Previously Presented) The device of claim 46 wherein the sealant flows at an activation temperature which causes sealing between the laminate substrate and the support post.

48. (Previously presented) The device of claim 47 wherein the first laminate comprises a barrier layer on the laminate, the barrier layer inhibits the diffusion of air or moisture.

49. (Previously Presented) The device of claim 45 wherein the sealant comprises an activation temperature which causes the sealant to flow to ensure sealing between the laminate and the support post.

50. (Previously presented) The device of claim 45 wherein the first laminate comprises a barrier layer on the laminate, the barrier layer inhibits the diffusion of air or moisture.

51-85. (Cancelled)

Applicant : Guenther et al.
Serial No. : 09/786,833
Filed : June 18, 2001
Page : 9 of 13

Attorney's Docket No.: 12406-012001 / 1999P8115 US
E/GS

86. (Previously Presented) The device of claim 1 wherein the at least one support post comprises directly or indirectly photopatternable material.

87. (Previously Presented) The device of claim 86 wherein the photopatternable material is a directly photopatternable material selected from a group consisting of photosensitive polyimide, photosensitive polybenzoxalole, photoresists, photoresists based on novolac systems and dry film resist materials.

88. (Previously Presented) The device of claim 86 wherein the indirectly photopatternable material is selected from the group consisting of spin-on glass, polyimide, polybenzoxazole, polyglutarimide, benzocyclobutene, polymers, polyethylene, polystyrene, polystyrene, polypropylene, silicon dioxide, silicon nitride and aluminum oxide.

89. (Previously Presented) The device of claim 86 wherein the at least one support post comprises a multi-layer architecture having at least first and second support layers.

90. (Previously Presented) The device of claim 87 wherein the at least one support post comprises a multi-layer architecture having at least first and second support layers.

91. (Previously Presented) The device of claim 88 wherein the first support layer comprises a dielectric material to provide electrical isolation for the active components.

92. (Previously Presented) The device of claim 89 wherein the first support layer comprises a dielectric material to provide electrical isolation for the active components.

93. (Previously presented) The device of claim 89 wherein the first and second support layers comprise directly or indirectly photopatternable material.

Applicant : Guenther et al.
Serial No. : 09/786,833
Filed : June 18, 2001
Page : 10 of 13

Attorney's Docket No.: 12406-012001 / 1999P8115 US
W/GS

94. (Cancelled)
95. (Previously Presented) The device of claim 1, wherein:
a cavity between said first laminate and said active components is present; and
the at least one support post supports areas of said first laminate that is arranged
above the cavity.
96. (Previously Presented) The device of claim 1, wherein:
additional support posts are present in the periphery of the substrate, surrounding
the active components.
97. (Previously Presented) The device of claim 1, wherein:
a cavity is between said first laminate and said active components;
the height of the support post is greater than the height of the active components;
and
the first laminate spans the cavity.
98. (Previously Presented) The device of claim 1, wherein:
the at least one support post prevents the first laminate from contacting the active
components.
99. (Previously Presented) A device comprising:
a substrate,
at least one active component formed on a top surface of the substrate,
a first laminate over the top surface of the substrate, encapsulating at least the
active component, wherein the laminate includes a barrier layer and a protective layer formed on
a plastic film, wherein the barrier layer is closer to the active component than the plastic film and
the plastic film is between the barrier layer and the protective layer, the barrier layer is capable of

Applicant : Guenther et al.
Serial No. : 09/786,833
Filed : June 18, 2001
Page : 11 of 13

Attorney's Docket No.: 12406-012001 / 1999P8115 US
H/GS

inhibiting diffusion of air or moisture and the protective layer includes a polymeric resin and forms a hard coat, and

at least one support post in a non-active region, providing support for said first laminate.

100. (Previously Presented) The device of claim 99, further comprising:

a second active component,

wherein the non-active region separates the first and second active components, where the non-active region includes a region on the substrate where two electrodes do not intersect.

101. (Previously Presented) The device of claim 1, wherein the at least one support post includes a multilayer architecture, having at least a first support layer and a second support layer, the first support layer facing the active components and the second support layer facing the first laminate.

102. (Previously Presented) The device of claim 101, wherein the first support layer includes a dielectric material to electrically isolate the active components.

103. (Previously Presented) The device of claim 102, wherein the second support layer includes a material that enhances sealing with the first laminate.

104. (Previously Presented) The device of claim 101, wherein the second support layer includes a material that enhances sealing with the first laminate.

105. (Previously Presented) The device of claim 104, wherein the second support layer includes a polymer.

Applicant : Guenther et al.
Serial No. : 09/786,833
Filed : June 18, 2001
Page : 12 of 13

Attorney's Docket No.: 12406-012001 / 1999P8115 US
E/GS

106-108. (Cancelled)

109. (Previously Presented) The device of claim 1, wherein:
the barrier layer includes a ceramic.